## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

: Grimes, et al.

Serial No.

: N/A

Filing Date

: N/A

For

: "CHIMERIC PEPTIDE IMMUNOGENS"

Examiner:

: N/A

Group Art No.

: N/A

"EXPRESS MAIL" Label No. EK907964437US

Date of Deposit May 4, 2001

I hereby certify that this paper is being deposited with

the United States Postal

Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated

above and is addressed to: The Assistant

Commissioner for Patents, Washington, D.C. 20231.

michael Rames

Type or print name of person mailing paper or fee)

maruel Romes

(Signature of person mailing paper or fee)

Honorable Commissioner for Patents Washington, D.C. 20231

## STATEMENT REGARDING CONTENT OF PAPER AND COMPUTER READABLE COPIES OF SEQUENCE LISTING

Sir:

The above-identified application contains a Sequence Listing. In accordance with M.P.E.P. § 2224.06 and 37 C.F.R. § 1.821(f), the undersigned agent for Applicants states that the content of the paper and computer readable copies of the Sequence Listing enclosed herewith are the same.

Dated: May 4, 2001

Respectfully submitted,

Hans-Peter G. Hoffmann, Ph.D.

Reg. No. 37352

Customer No. 007470

(212)-819-8200

Agent's Direct Line: (212)-819-8840

```
<110> Aphton Corporation
<120> Chimeric Peptide for Use as Immunogen
<130> 1102865-0047
<150> 60/202,328
<151> 2000-05-05
<160> 20
<170> PatentIn version 3.0
<210> 1
<211> 10
<212> PRT
<213> synthetic construct
 <220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Pyroglutamic acid or 5-oxoproline
 <220>
 <221> MOD_RES
 <222> (10)..(10)
 <223> Amidated-glycine or glycinamide
 <400> 1
 Glu His Trp Ser Tyr Gly Leu Arg Pro Gly
 <210> 2
  <211> 16
  <212> PRT
  <213> synthetic construct
  <220>
  <221> PEPTIDE
```

<222> (1)..(16)

SEQUENCE LISTING

```
<212> PRT
    <213> synthetic construct
    <220>
     <221> PEPTIDE
<222> (1)..(20)
     <223> Amino acid sequence 378-398 of the Plamodium
            falciparum circumsporozoite protein
    <400> 3
    Asp Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn
                    5
                                       10
    Val Val Asn Ser
                20
     <210> 4
     <211> 21
```

<223> Amino acid sequence 829-844 of the Tetanus Toxoid Precursor (Tentoxylysin)

Met Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu

15

15

<400> 2

<210> 3 <211> 20

<212> PRT

<221> PEPTIDE <222> (1)..(21)

<220>

<213> synthetic construct

<223> Amino acid sequence 947-967 of Tetanus Toxoid Precursor (Tentoxylysin)

```
Ala Ser His Leu Glu
               20
     <210> 5
     <211> 4
     <212> PRT
     <213> synthetic construct
     <400> 5
Gly Pro Ser Leu
     <210> 6
     <211> 6
     <212> PRT
     <213> synthetic construct
     <400> 6
     Ser Ser Gly Pro Ser Leu
     <210> 7
     <211> 8
     <212> PRT
     <213> synthetic construct
     <400> 7
     Ser Ser Gly Pro Ser Leu Lys Leu
```

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser

<400> 4

<210> 8 <211> 16

```
<212> PRT
     <213> synthetic construct
      <220>
      <221> PEPTIDE
      <222> (1)..(16)
      <223> Amino acid sequence 288-302 of the measles
              virus fusion protein, F
      <400> 8
      Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly Val Glu
                       5
                                                                    15
The drain of the first stars and the first stars and the first stars and the first stars of the first stars of
      <210> 9
      <211> 31
      <212> PRT
      <213> synthetic construct
      <220>
      <221> MOD RES
      <222> (1)..(1)
      <223> Amidated Lysine
      <220>
      <221> PEPTIDE
      <222> (1)..(15)
      <223> Peptide corresponds to the amino acid sequences 288-302 of the
              measles virus fusion protein, F
      <220>
      <221> PEPTIDE
      <222> (19)..(22)
      <223> Spacer peptide
      <220>
      <221> PEPTIDE
```

```
<223> Ppeptide corresponds to amino acid sequences 2-10 of the human
                                                   GnRH hormone
                     <220>
                     <221> MOD RES
                     <222> (31)..(31)
                     <223> Amidated glycine or glycinamide
                     <400> 9
                     Lys Leu Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly
                     Val Glu Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro Gly
And the state of the state state state of the state of th
                                                                                                                                                      25
                     <210> 10
                     <211> 34
                      <212> PRT
                      <213> synthetic construct
                      <220>
                      <221> MOD_RES
                      <222> (1)..(1)
                      <223> Amidated phenylalanine
                      <220>
                       <221> PEPTIDE
                      <222> (1)..(21)
                       <223> Amino acids 947-967 of the Tetanus Toxoid Precursor
                                                    (Tentoxylysin)
                       <220>
                       <221> PEPTIDE
                       <222> (22)..(25)
                       <223> Spacer peptide
                       <220>
                       <221> PEPTIDE
                       <222> (26)..(34)
```

<222> (23)..(31)

```
<220>
                        <221> MOD RES
                        <222> (34)..(34)
                        <223> Amidated glycine or glycinamide
                        <400> 10
                        Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser
                        Ala Ser His Leu Glu Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg
The little with the first first and the little with the little
                        Pro Gly
                        <210> 11
                         <211> 28
                         <212> PRT
                         <213> synthetic construct
                         <220>
                        <221> MOD RES
                        <222> (1)..(1)
                         <223> Amidated-glutamine
                         <220>
                         <221> MOD RES
                         <222> (28)..(28)
                         <223> Amidated-glycine or glycinamide
                         <220>
                         <221> PEPTIDE
                         <222> (1)..(15)
                         <223> Amino acid sequence 830-844 of the Tetanus Toxoid Precursor
                                                        (Tentoxylysin)
                          <220>
```

<223> Amino acids 2-10 of the human GnRH hormone

j

```
<221> PEPTIDE
    <222> (16)..(19)
    <223> Spacer peptide
    <220>
    <221> PEPTIDE
    <222> (20)..(28)
    <223> Amino acid sequence 2-10 of the human GnRH hormone
    <400> 11
    Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Gly
    Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro Gly
<210> 12
    <211> 33
    <212> PRT
    <213> synthetic construct
    <220>
    <221> MOD_RES
    <222> (1)..(1)
    <223> Amidated aspartic acid
     <220>
     <221> MOD RES
     <222> (33)..(33)
     <223> Amidated glycine or glycinamide
     <220>
     <221> PEPTIDE
     <222> (1)..(20)
     <223> Amino acid sequence 378-398 of the Malaria circumsporozoite
           (CSP) protein
```

<220>

```
<222> (21)..(24)
     <223> Spacer peptide
     <220>
     <221> PEPTIDE
     <222> (25)..(33)
     <223> Amino acid sequence 2-10 of the human GnRH hormone
     <400> 12
     Asp Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn
     Val Val Asn Ser Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro
25
     Gly
     <210> 13
     <211> 34
     <212> PRT
     <213> synthetic construct
     <220>
     <221> PEPTIDE
     <222> (1)..(10)
     <223> Amino acid sequence 1-10 of the human GnRH hormone
     <220>
     <221> PEPTIDE
     <222> (11)..(18)
     <223> Spacer peptide
     <220>
     <221> PEPTIDE
     <222> (19)..(34)
     <223> Amino acid sequence 288-302 of the Measles
```

virus fusion protein, F

<221> PEPTIDE

```
<222> (1)..(1)
         <223> Pyro-glutamic acid or 5-oxoproline
         <400> 13
         Glu His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu
                                                  10
         Lys Leu Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly
                                              25
the first tends of the first tends
         Val Glu
         <210> 14
         <211> 37
         <212> PRT
         <213> synthetic construct
         <220>
         <221> MOD_RES
         <222> (1)..(1)
         <223> Pyroglutamic acid or 5-oxoproline
         <220>
         <221> PEPTIDE
         <222> (1)..(10)
         <223> Amino acid sequence 1-10 of the human GnRH hormone
         <220>
         <221> PEPTIDE
         <222> (11)..(16)
         <223> Spacer peptide
          <220>
```

/

<221> PEPTIDE

7 . Y

<220>

<221> MOD\_RES

```
<222> (17)..(37)
<223> Amino acid sequence 947-967 of the Tetanus toxoid precursor
      (Tentoxylysin)
<400> 14
Glu His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu
Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser
                               25
Ala Ser His Leu Glu
       35
<210> 15
<211> 31
<212> PRT
<213> synthetic construct
<220>
<221> MOD_RES
<222> (1)..(1)
<223> Pyroglutamic acid or 5-oxoproline
<220>
<221> PEPTIDE
<222> (1)..(10)
<223> Amino acid sequence 1-10 of the human GnRH hormone
<220>
<221> PEPTIDE
<222> (11)..(16)
<223> Spacer peptide
<220>
<221> PEPTIDE
<222> (17)..(31)
<223> Amino acid sequence 830-844 of the Tetanus toxoid precursor
       (Tentoxylysin)
```

4 L j 3

j

\* ( ) \*

```
<400> 15
Glu His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu
Gin Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu
                             25
<210> 16
<211> 36
<212> PRT
<213> synthetic construct
<220>
<221> MOD_RES
<222> (1)..(1)
<223> Pyroglutamic acid or 5-oxoproline
<220>
<221> PEPTIDE
<222> (1)..(10)
<223> Amino acid sequence 1-10 of the human GnRH hormone
<220>
<221> PEPTIDE
<222> (11)..(16)
<223> Spacer peptide
<220>
<221> PEPTIDE
<222> (17)..(36)
<223> Amino acid sequence 378-398 of the Malaria
       (Plasmodium falciparum) circumsporozoite
       (CSP) protein
```

```
Glu His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu
Asp Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn
                                                 30
Val Val Asn Ser
       35
<210> 17
<211> 47
<212> PRT
<213> synthetic construct
<220>
<221> MOD_RES
<222> (1)..(1)
<223> Pyro-glutamic acid or 5-oxoproline
<220>
<221> PEPTIDE
<222> (1)..(10)
<223> Amino acid sequence 1-10 of the human GnRH hormone
<220>
<221> PEPTIDE
<222> (11)..(18)
<223> Spacer peptide
<220>
<221> PEPTIDE
<222> (19)..(34)
<223> Amino acid sequence 288-302 of the Measles
```

virus fusion protein, F

<400> 16

Ü

CALIFICATION OF THE STATE OF TH

```
<220>
<221> PEPTIDE
<222> (35)..(38)
<223> Spacer peptide
<220>
<221> PEPTIDE
<222> (39)..(47)
<223> Amino acid sequence 2-10 of the human GnRH hormone
<400> 17
Glu His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu
Lys Leu Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly
                               25
Val Glu Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro Gly
<210> 18
<211> 50
<212> PRT
<213> synthetic construct
<220>
<221> MOD_RES
<222> (1)..(1)
<223> Pyroglutamic acid or 5-oxoproline
<220>
<221> PEPTIDE
<222> (1)..(10)
<223> Amino acid sequence 1-10 of the human GnRH hormone
```

```
<220>
  <221> PEPTIDE
  <222> (11)..(16)
  <223> Spacer peptide
   <220>
   <221> PEPTIDE
   <222> (17)..(37)
   <223> Amino acid sequence 947-967 of the Tetanus Toxoid Precursor
          (Tentoxylysin)
   <220>
   <221> PEPTIDE
   <222> (38)..(41)
<223> Spacer peptide
   <220>
Ū
   <221> PEPTIDE
<222> (42)..(50)
   <223> Amino acid sequence 2-10 of the human GnRH hormone
   <220>
    <221> MOD_RES
    <222> (50)..(50)
   <223> Amidated glycine or glycinamide
    <400> 18
    Glu His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu
                   5
                                       10
    Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser
                20
    Ala Ser His Leu Glu Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg
                              40
           35
    Pro Gly
        50
```

( ) 1

```
<210> 19
<211> 46
<212> PRT
<213> synthetic construct
<220>
<221> MOD_RES
<222> (1)..(1)
<223> Pyroglutamic acid or 5-oxoproline
<220>
<221> MOD RES
<222> (46)..(46)
<223> Amidated glycine or glycinamide
<220>
<221> PEPTIDE
<222> (1)..(10)
<223> Amino acid sequence 1-10 of the human GnRH hormone
<220>
<221> PEPTIDE
<222> (11)..(16)
<223> Spacer peptide
<220>
<221> PEPTIDE
<222> (17)..(31)
<223> Amino acid sequence 830-844 of the Tetanus Toxoid Precursor
       (Tentoxylysin)
<220>
<221> PEPTIDE
<222> (32)..(37)
<223> Spacer peptide
```

```
<220>
<221> PEPTIDE
<222> (38)..(46)
<223> Amino acid sequence 2-10 of the human GnRH hormone
<400> 19
Glu His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu
Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Ser
                             25
          20
Ser Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro Gly
                          40
<210> 20
<211> 51
<212> PRT
<213> synthetic construct
<220>
<221> MOD_RES
<222> (1)..(1)
 <223> Pyroglutamic acid or 5-oxoproline
 <220>
 <221> MOD RES
 <222> (51)..(51)
 <223> Amidated glycine or glycinamide
 <220>
 <221> PEPTIDE
 <222> (1)..(10)
 <223> Amino acid sequence 1-10 of the GnRH hormone
 <220>
 <221> PEPTIDE
 <222> (11)..(16)
```

<223> Spacer peptide

```
<220>
<221> PEPTIDE
<222> (17)..(36)
<223> Amino acid sequence 378-398 of the Malaria circumsporozoite
       (CSP) protein
<220>
<221> PEPTIDE
<222> (37)..(42)
<223> Spacer peptide
<220>
<221> PEPTIDE
<222> (43)..(51)
<223> Amino acid sequence 2-10 of the human GnRH hormone
<400> 20
Glu His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu
Asp Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn
Val Val Asn Ser Ser Ser Gly Pro Ser Leu His Trp Ser Tyr Gly Leu
Arg Pro Gly
```

1